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favor of allowing such reserves to remain in the ground pending the next national emergency. But the recovery of potash as a by-product of cement manufacture and from iron-blast-furnace dust is utilization of raw material and of heat energy that otherwise would be wasted and should command the support of all conservationists. Such processes have the added advantage of minimizing the dust nuisance around cement plants, which is a danger to the health of employees and is detrimental to crops in agricultural districts. It has been estimated that in the United States, if all cement plants were equipped to recover potash salts, potash equivalent to over one-fourth of our normal imports of German potash salts could be recovered.

The report under review outlines briefly the principles underlying the recovery processes and describes in outline the equipments at all the plants in the United States and Canada where potash recovery has thus far been practiced. At the temperatures of 1,400 to 1,500° C. obtained in cement kilns, the potash-bearing silicates are in part decomposed, potash reuniting usually with the sulphate radical to form potassium sulphate, or to a lesser extent with the chloride radical to form potassium chloride—salts which are soluble and which pass into the stacks with the gases, where they can be recovered by spraying the gases or precipitating the dust by the Cottrell electrical process. The quantity of potash salts produced varies from 2 to 7 pounds per barrel of Portland cement.

Installation of potash-recovery equipment does not involve any changes in the processes of cement manufacture, nor does it affect the grade of the cement produced.

The report closes with a complete bibliography.

E. S. B.

Timiskaming County, Quebec. By M. E. Wilson. Canadian Geological Survey, Memoir 103, Ottawa, 1918. Pp. 197, pls. XVI, figs. 6, map.

This is a concise, detailed report of the results and conclusions of geological field work carried on for a number of years in Timiskaming County, together with a theoretical discussion of some of the more important problems of the area.

Timiskaming County has an area of approximately 20,000 square miles and lies on the east side of the boundary line between Ontario and Quebec and east and northeast of Lake Timiskaming. The National Transcontinental Railway crosses the northern part of the county and this part can be easily reached.

This area lies within the Laurentian Plateau and is characterized by a remarkable uniform relief but the surface in detail is irregular. The minimum elevation is almost everywhere more than 800 feet, and the maximum less than 2,000 feet; thus the range in elevation is seldom greater than 1,200 feet. The northern part of the county is drained by the Bell and Harricanaw rivers flowing into James Bay, and the southern part by the head waters of the Ottawa River flowing into the St. Lawrence River.

A very widespread base-level represented by the erosion surface between the basal complex and the Cobalt series or other late pre-Cambrian formations is still preserved. So also is the peneplain developed before the advance of the early Paleozoic seas. Since these early Paleozoic rocks are approximately horizontal, all the movements of this great area since that time have been due to regional uplift, warping, and faulting. Of these, faulting has been the most important.

Another very noticeable physiographic feature is the large number of linear valleys, which, when classified according to general direction, fall into three groups striking approximately northwest, north, and northeast. The evidence in favor and against the faulting hypothesis of origin for these valleys is given. The faulting hypothesis most easily accounts for these valleys, and is assumed to be the most reasonable explanation, although very little field evidence of faulting along the valleys has been found. These valleys are post-Silurian and pre-Glacial.

The rocks occurring in Timiskaming County fall into the following four divisions: (1) the basal complex, (2) the Cobalt series and associated intrusives, (3) the Ordovician and Silurian sediments, and (4) Quaternary Glacial and post-Glacial gravels, sands, and clays. Detailed lithologic descriptions are given of the many different rock types represented, with notes on the structure and origin of many of the metamorphic types. Based on lithology and origin, the rocks of this region may be grouped into three parallel belts running in a northeasterly direction. Sediments belonging to the Grenville series characterize the south belt; banded gneisses mostly of igneous origin, the central belt; and volcanics and clastic sediments, the Pontiac series, the north belt. In the southern part of Timiskaming County inclusions of Grenville sediments are found along the southern edge of the banded gneiss belt. Because of the many difficulties and uncertainties of long-distance correlation of very intensely metamorphosed pre-Cambrian formations outlined in chapter IV, no attempt is made to correlate the Grenville sediments south of the belt of igneous rocks, with the Pontiac series north of this belt, although the three possible theoretical relationships are given.

Chapter VI deals with "Special Problems of the Timiskaming Region," a brief summary of the literature together with evidences and conclusions reached from a detailed study of this particular area. Conclusions are given concerning such problems as the "Origin of Pillow Structure," "Origin of Ferruginous Dolomite," "Origin of Banded Gneisses," "Origin of the Cobalt Series"; a general discussion of the "Clay Belt of Northern Ontario and Quebec," and the "Origin, Extent, and Duration of Lake Barlow and Lake Ojibway."

In chapter VII the gold, silver, and molybdenite prospects of the area are described. When this report was written none of these prospects was developed to the state of producing mines. The great mantle of post-Glacial lake clays which cover a large part of the county makes prospecting difficult.

In a brief review of this Memoir it is impossible to give an adequate summary of the many important problems of pre-Cambrian geology discussed. This Memoir will be found useful to anyone interested in the problems of pre-Cambrian geology of Quebec and Ontario.

J. F. W.

The Paleozoic Rocks of the Canton Quadrangle. By G. H. CHADWICK. New York State Museum Bulletin, Nos. 217, 218. Albany, N.Y., 1919. Pp. 60, pls. 12, figs. 3, maps 1.

Across the northern third of this quandrangle the Paleozoic rocks form the country rock, while in the southern two-thirds they outcrop as outliers among the pre-Cambrian rocks. These Paleozoic rocks are Upper Cambrian and Early Ordovician in age. A section from the base up is as follows: Potsdam sandstone and conglomerate (Cambrian) 0–150 feet, followed by a possible unconformity, then deposition of white sandstone 100 (?) feet, Theresa dolomite and sandstone 50 feet, and Heuvelton white sandstone 10–25 feet in thickness, all of which are Saratogan or Ozarkian in age. The Heuvelton is followed by a disconformity and after this period of erosion the Ordovician (Beekmantown) represented by the Bucks Bridge mixed beds of dolomite and sandstone 50–75 feet in thickness, followed by an unconformity and above this unconformity the basal 30 feet of the Ogdensburg dolomite. These various formations are described in detail. The Heuvelton and all beds above it are fossiliferous, but the fossils are poorly preserved.